



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,226	08/22/2003	Izaya Okae	3712174.00424	1391
29175 7590 07/29/2010 K&L Gates LLP P. O. BOX 1135 CHICAGO, IL 60690				
EXAMINER				
ECHELMMEYER, ALIX ELIZABETH				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
07/20/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

chicago.patents@klgates.com

### Office Action Summary

**Application No.**

10/646,226

**Applicant(s)**

OKAE ET AL.

**Examiner**

Alix Elizabeth Echelmeyer

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6, 7, 9, 10, 12-14, 16, 17, 19, 20, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6, 7, 9, 10, 12-14, 16, 17, 19, 20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 26, 2010 has been entered.
2. Claims 6, 12, 16, 19, 22, and 23 have been amended. Claims 8, 18, and 21 are cancelled; claims 1-5, 11, and 15 were previously cancelled. Claims 6, 7, 9, 10, 12-14, 17, 20, 22, and 23 are pending and are rejected for the reasons given below.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6, 7, 9, 12, 13, 16, 19, 20, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaura (JP 2002-075368) in view of Abe (US 6,258,483) and Kurose et al. (WO00/02280, with US 6,824,924 used as an English translation,

since it is the 371 of the foreign application) and as evidenced by Chaloner-Gill et al. (US 2002/0192137).

Yamaura teaches a positive electrode active material for a nonaqueous electrolyte cell wherein the particles of active material are of the formula  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  wherein M is one of Al, Co, and B, and the surfaces of the particles are covered by particles of the general formula  $\text{LiFePO}_4$  (abstract, [0001]).

Yamaura teaches coating of the  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  particles with the  $\text{LiFePO}_4$  particles by mixing in a hybridization system, adjusting the rotational speed to produce the desired product ([0054], [0055]). Since this same method is disclosed in the instant specification (page 11 lines 18-26), the skilled artisan would find that the resulting product would be the same.

In paragraph [0037] of the instant disclosure, applicants name  $\text{LiFePO}_4$  as a preferable positive active material but fail to state explicitly that  $\text{LiFePO}_4$  is of the olivine structure.

Chaloner-Gill teaches that crystalline lithium iron phosphate has an olivine structure ([0126]).

Yamaura fail to teach the claimed weight percent of  $\text{LiFeO}_4$  to lithium nickelate substrate.

Abe teaches a battery having a positive active material having one material coated on another (column 6 lines 2-5). Abe further teaches that the right amount of

coating should be determined, since if there is too much or too little the active material will not have the desired properties of both materials (column 13 lines 38-48).

One of ordinary skill in the art could have applied the improvement of Abe of determining the best ratio coating to base particle to the ratio of nickelate to  $\text{LiFeO}_4$  in Yamaura and the results would have been predictable.

Regarding claims 7, 8, 17, 18, 20 and 23, the  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  particles are  $11.458\text{ }\mu\text{m}$  on average and the  $\text{LiFePO}_4$  particles are  $0.185\text{ }\mu\text{m}$  on average ([0054]).

With further regard to claims 6, 12, 16 and 19, Yamaura fail to teach the claimed weight percent of  $\text{LiFeO}_4$  to lithium nickelate substrate.

Abe teaches a battery having a positive active material having one material coated on another (column 6 lines 2-5). Abe further teaches that the right amount of coating should be determined, since if there is too much or too little the active material will not have the desired properties of both materials (column 13 lines 38-48).

Further, when the desired ratio of  $\text{LiFePO}_4$  particles to nickelate is determined as discussed above, the claimed coating thickness would result since the thickness is determined by the amount of coating material.

One of ordinary skill in the art could have applied the improvement of Abe of determining the best ratio coating to base particle to the ratio of nickelate to  $\text{LiFeO}_4$  in Yamaura and the results would have been predictable.

Yamaura fails to teach the lithium nickelate compound of instant claims 6, 9, 12, 13, 16 and 19.

Kurose et al. teach  $\text{LiNiO}_2$  as a positive electrode active material (column 2 lines 56-58). Kurose et al. further teach that the use of  $\text{LiNiO}_2$  as a positive electrode active material leads to a reduction in size and weight in the battery, increasing energy density.

It would be desirable to use  $\text{LiNiO}_2$  as a positive electrode active material in the battery of Yamaura such as taught by Kurose et al. since it would lead to a reduction in size and weight in the battery, increasing energy density.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to look to the teachings of Kurose et al. suggesting the use of  $\text{LiNiO}_2$  as a positive electrode active material in the battery of Yamaura, since such a substitution of  $\text{LiNiO}_2$  for the lithium nickel oxide of Yamaura would result in the reduction of size and weight of the battery, leading to an increase in energy density.

5. Claims 10 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaura et al. in view of Kurose et al. as applied to claims 6 and 12 above, and further in view of Goodenough et al. (US 6,391,493).

Yamaura et al. in view of Kurose et al. fail to teach that the olivine compound of the positive active material is  $\text{LiMnPO}_4$ .

Goodenough et al. teach that that a preferred olivine electrode compound is  $\text{LiMnPO}_4$  (column 2 lines 22-24), since it has a larger free volume for lithium-ion motion,

which leads to higher lithium-ion conductivity and higher power density, as well as making an inexpensive and nonpolluting battery (column 1 lines 51-57).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to look to the teachings of Goodenough et al. suggesting the use of  $\text{LiMnPO}_4$  as a positive electrode active material in the battery of Yamaura in view of Kurose et al., since such a substitution of  $\text{LiMnPO}_4$  for the  $\text{LiFePO}_4$  of Yamaura is obvious over the teachings of Goodenough et al.

### ***Response to Arguments***

6. Applicant's arguments filed May 26, 2010 have been fully considered but they are not persuasive.

Regarding Applicant's arguments on pages 9-10 that Yamaura does not teach the claimed particles, the examiner disagrees. As is discussed above, Yamaura teaches the same for making the active materials ([0054], [0055]) as the instantly disclosed method (page 11 lines 18-26). The skilled artisan will recognize that using the same method will result in the same product.

Beginning on the bottom of page 10, Applicant argues that Yamaura and Abe cannot be combined because they are related to different types of batteries. However, the combination is not based on battery chemistry but on the teaching of Abe to balance the combination of two materials used in an active material to find the best ratio for the application. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642

F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1795

ae